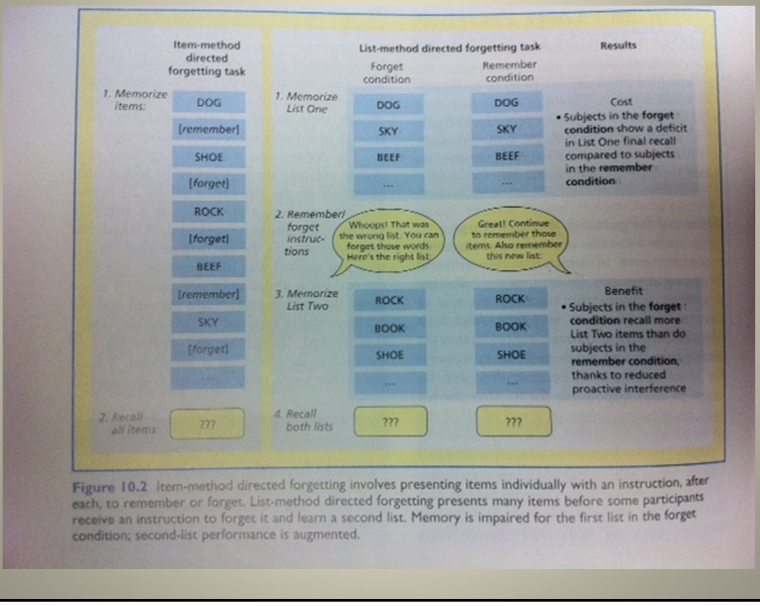
Intentional forgetting

Psychology 248

Prof. Benjamin

Procedures for inducing directed forgetting


Item-method directed forgetting task
1. Memorize items:
DOG
[remember]
SHOE
[forget]
ROCK
[forget]
BEEF
[remember]
SKY
[forget]
...
2. Recall all items:
???
List-method directed forgetting task
Forget condition
Remember condition
1. Memorize List One
DOG
SKY
BEEF
...
2. Remember/ forget instructions
Whoops! That was the wrong list. You can forget those words. Here's the right list
Great! Continue to remember those items. Also remember this new list:
3. Memorize List Two
ROCK
BOOK
SHOE
...
4. Recall both lists
???
Results

Cost

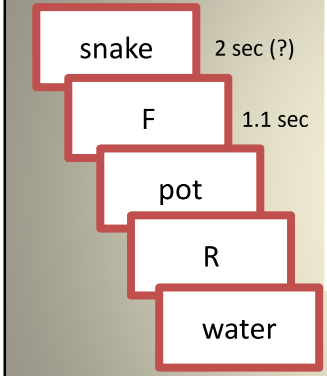
- Subjects in the **forget condition** show a deficit in List One final recall compared to subjects in the **remember condition**

Benefit

- Subjects in the **forget condition** recall more List Two items than do subjects in the **remember condition**, thanks to reduced proactive interference

Figure 10.2 Item-method directed forgetting involves presenting items individually with an instruction, after each, to remember or forget. List-method directed forgetting presents many items before some participants receive an instruction to forget it and learn a second list. Memory is impaired for the first list in the forget condition; second-list performance is augmented.

Item-method directed forgetting



2 sec (?)

1.1 sec

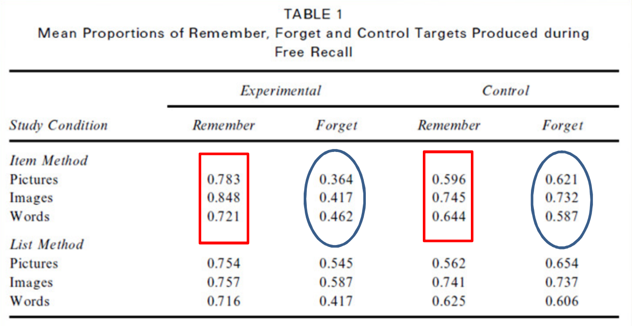


TABLE 1
Mean Proportions of Remember, Forget and Control Targets Produced during Free Recall

	Experimental		*Control*	
Study Condition	*Remember*	*Forget*	*Remember*	*Forget*
Item Method				
Pictures	0.783	0.364	0.596	0.621
Images	0.848	0.417	0.745	0.732
Words	0.721	0.462	0.644	0.587
List Method				
Pictures	0.754	0.545	0.562	0.654
Images	0.757	0.587	0.741	0.737
Words	0.716	0.417	0.625	0.606

Basden & Basden (1996)

□ benefits

○ costs

Item-method directed forgetting

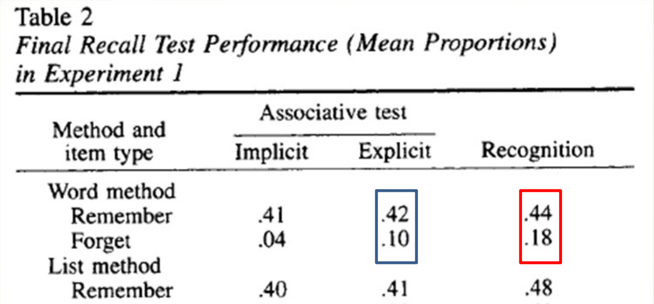


Table 2
Final Recall Test Performance (Mean Proportions) in Experiment 1

Method and item type	Associative test		Recognition
	Implicit	Explicit	
Word method			
Remember	.41	.42	.44
Forget	.04	.10	.18
List method			
Remember	.40	.41	.48
Forget	.21	.33	.41

Basden, Basden, & Gargano (1993)

Study:
gas – shower

Explicit associative test:
gas - ?

Recognition:
shower? (yes or no)

Item-method directed forgetting affects both recall and recognition

List-method directed forgetting

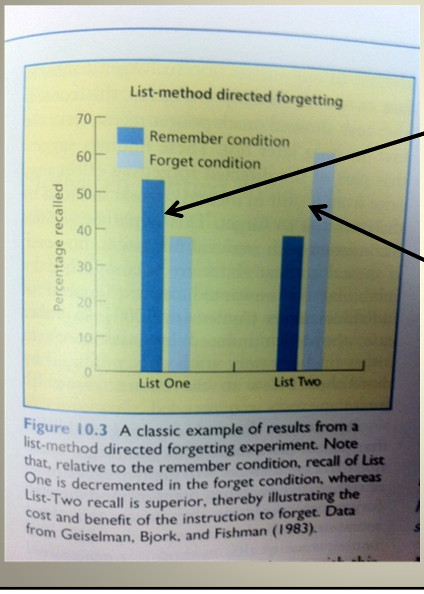


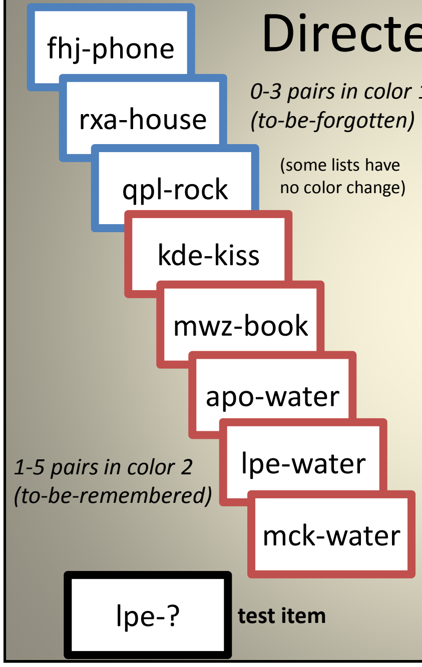
Figure 10.3 A classic example of results from a list-method directed forgetting experiment. Note that, relative to the remember condition, recall of List One is decremented in the forget condition, whereas List-Two recall is superior, thereby illustrating the cost and benefit of the instruction to forget. Data from Geiselman, Bjork, and Fishman (1983).

Costs of directed forgetting

Benefits of directed forgetting

Geiselman, Bjork, & Fishman (1983)

Directed forgetting


fhj-phone

rxa-house

qpl-rock

kde-kiss

mwz-book

apo-water

lpe-water

mck-water

0-3 pairs in color 1
(to-be-forgotten)

(some lists have
no color change)

1-5 pairs in color 2
(to-be-remembered)

lpe-? **test item**

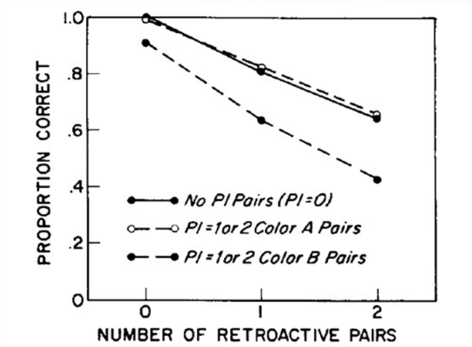


FIG. 1. Proactive interference resulting from the to-be-forgotten (color A) pairs versus proactive interference resulting from the to-be-remembered (color B) pairs.

Bjork (1970)

List-method directed forgetting

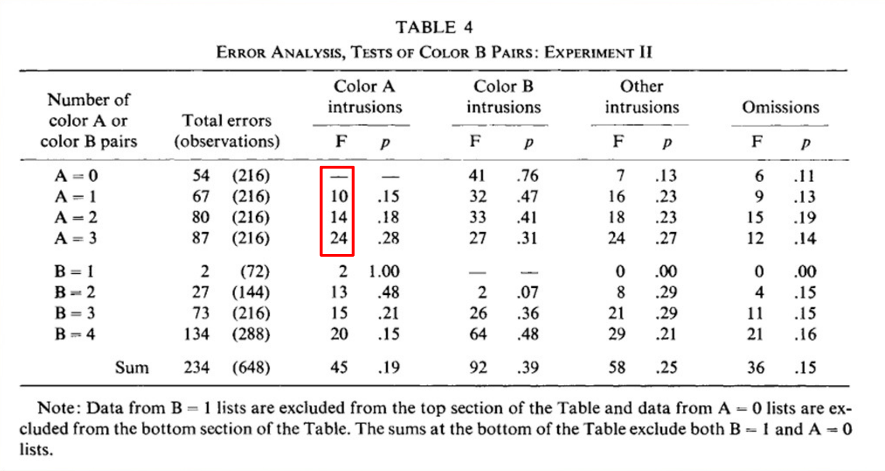


TABLE 4

ERROR ANALYSIS, TESTS OF COLOR B PAIRS: EXPERIMENT II

Number of color A or color B pairs	Total errors (observations)		Color A intrusions		Color B intrusions		Other intrusions		Omissions	
			F	p	F	p	F	p	F	p
A = 0	54	(216)	—	—	41	.76	7	.13	6	.11
A = 1	67	(216)	10	.15	32	.47	16	.23	9	.13
A = 2	80	(216)	14	.18	33	.41	18	.23	15	.19
A = 3	87	(216)	24	.28	27	.31	24	.27	12	.14
B = 1	2	(72)	2	1.00	—	—	0	.00	0	.00
B = 2	27	(144)	13	.48	2	.07	8	.29	4	.15
B = 3	73	(216)	15	.21	26	.36	21	.29	11	.15
B = 4	134	(288)	20	.15	64	.48	29	.21	21	.16
Sum	234	(648)	45	.19	92	.39	58	.25	36	.15

Note: Data from B = 1 lists are excluded from the top section of the Table and data from A = 0 lists are excluded from the bottom section of the Table. The sums at the bottom of the Table exclude both B = 1 and A = 0 lists.

Bjork (1970)

The words are not completely "erased" from memory because they show up as intrusions to other cues.

List-method directed forgetting

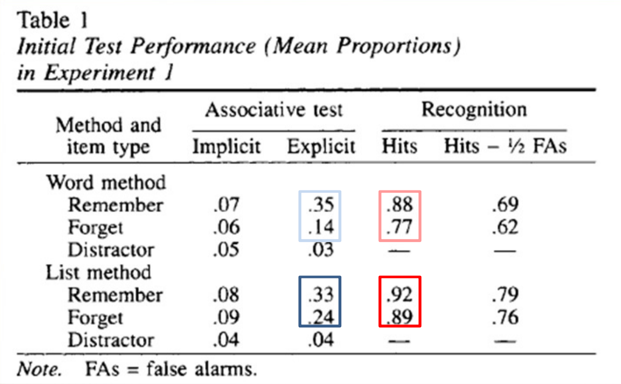


Table 1

Initial Test Performance (Mean Proportions) in Experiment 1

Method and item type	Associative test		Recognition	
	Implicit	Explicit	Hits	Hits – ½ FAs
Word method				
Remember	.07	.35	.88	.69
Forget	.06	.14	.77	.62
Distractor	.05	.03	—	—
List method				
Remember	.08	.33	.92	.79
Forget	.09	.24	.89	.76
Distractor	.04	.04	—	—

Note. FAs = false alarms.

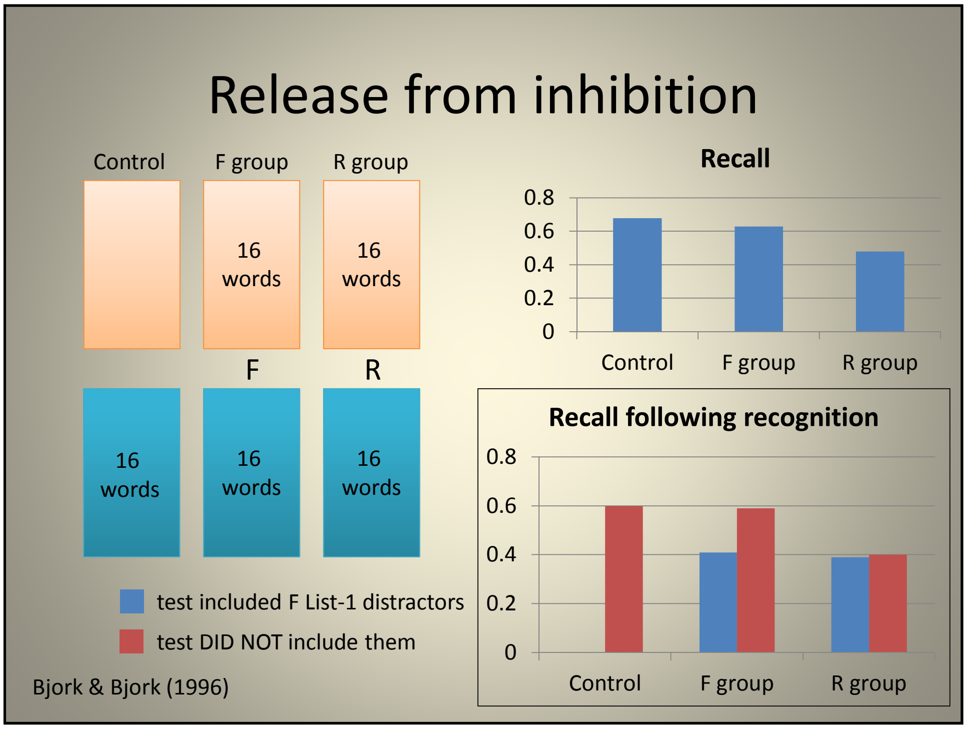
Study:
gas – shower

Explicit associative test:
gas - ?

Recognition:
shower? (yes or no)

Basden, Basden, & Gargano (1993)

LIST-method directed forgetting affects recall BUT NOT recognition

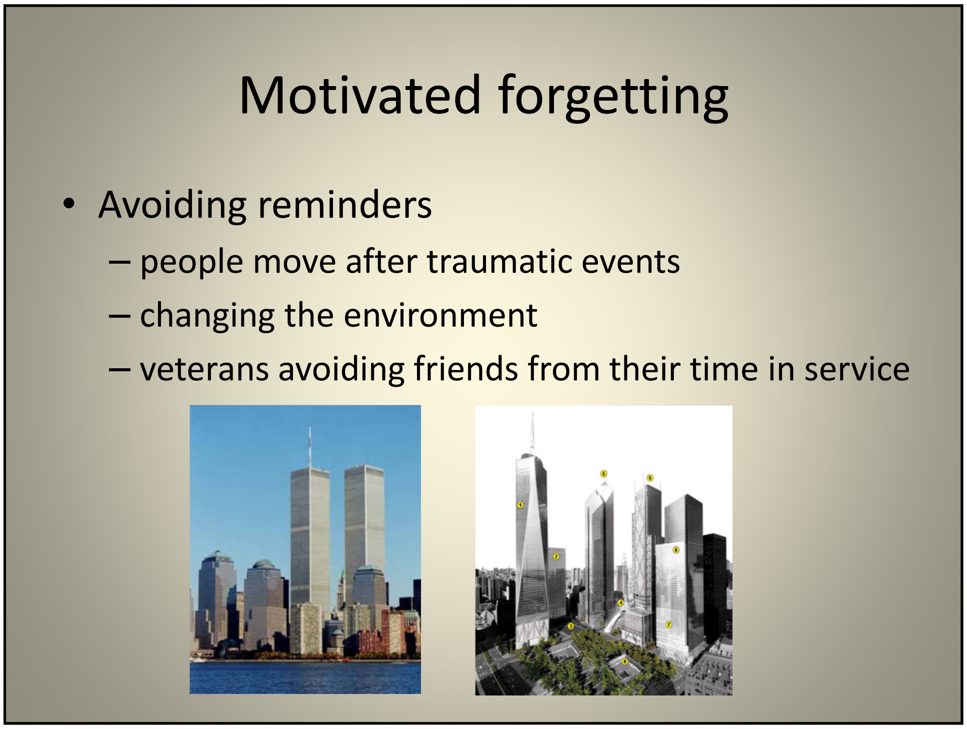


Release from inhibition

🟦 test included F List-1 distractors

🟥 test DID NOT include them

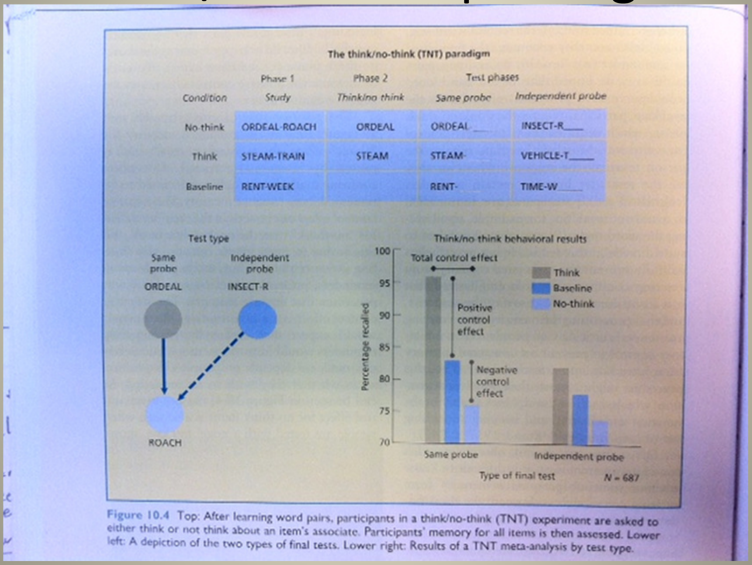
Bjork & Bjork (1996)



Motivated forgetting

- Avoiding reminders
  - people move after traumatic events
  - changing the environment
  - veterans avoiding friends from their time in service

Think / No-think paradigm



The think/no-think (TNT) paradigm

	Phase 1	Phase 2	Test phases	
Condition	*Study*	*Think/no think*	*Same probe*	*Independent probe*
No-think	ORDEAL-ROACH	ORDEAL	ORDEAL-___	INSECT-R___
Think	STEAM-TRAIN	STEAM	STEAM-___	VEHICLE-T___
Baseline	RENT-WEEK		RENT-___	TIME-W___

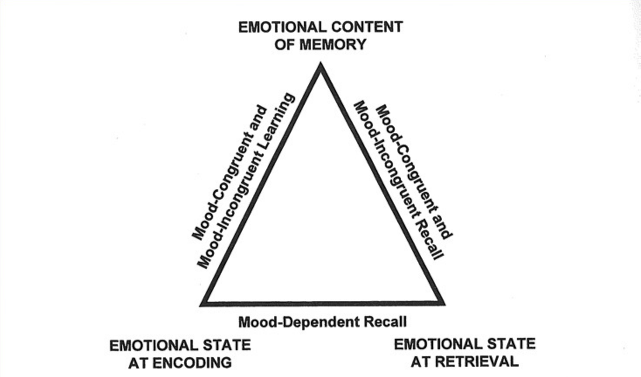
Test type
Same probe
Independent probe
ORDEAL
INSECT-R
ROACH
Think/no think behavioral results
Total control effect
Positive control effect
Negative control effect
Think
Baseline
No-think
Percentage recalled
100
95
90
85
80
75
70
Same probe
Independent probe
Type of final test
N = 687

Figure 10.4 Top: After learning word pairs, participants in a think/no-think (TNT) experiment are asked to either think or not think about an item's associate. Participants' memory for all items is then assessed. Lower left: A depiction of the two types of final tests. Lower right: Results of a TNT meta-analysis by test type.

Active suppression

Anderson & Green (2001)

Emotion and memory

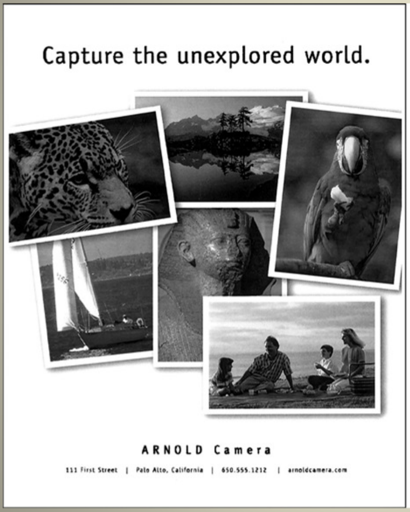


EMOTIONAL CONTENT OF MEMORY
Mood-Congruent and Mood-Incongruent Learning
Mood-Congruent and Mood-Incongruent Recall
Mood-Dependent Recall
EMOTIONAL STATE AT ENCODING
EMOTIONAL STATE AT RETRIEVAL

FIGURE 30.1. The emotion-and-memory triangle. The corners represent the three principal ways that emotion can influence memory. The sides represent the three pairwise interactions between these aspects of memory, and constitute the main topics of research on emotion and memory.

Parrott & Spackman (2000)

Emotion and memory for ads

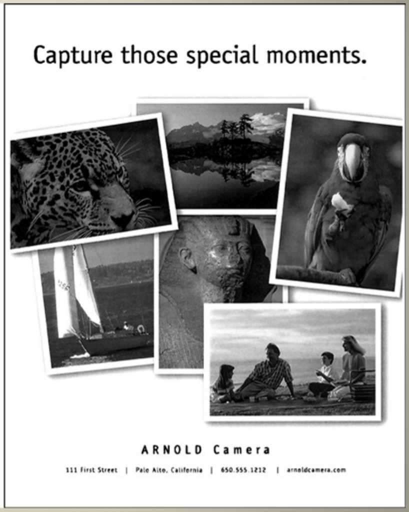


Capture the unexplored world.

ARNOLD Camera

111 First Street | Palo Alto, California | 650.555.1212 | arnoldcamera.com

this appeals to knowledge



Capture those special moments.

ARNOLD Camera

111 First Street | Palo Alto, California | 650.555.1212 | arnoldcamera.com

this appeals to emotion

Fung & Carstensen (2003)

Emotion and memory for ads

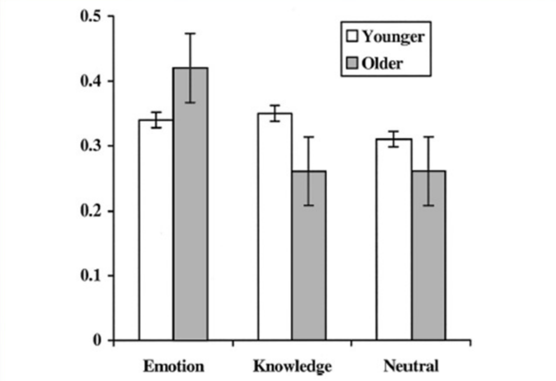
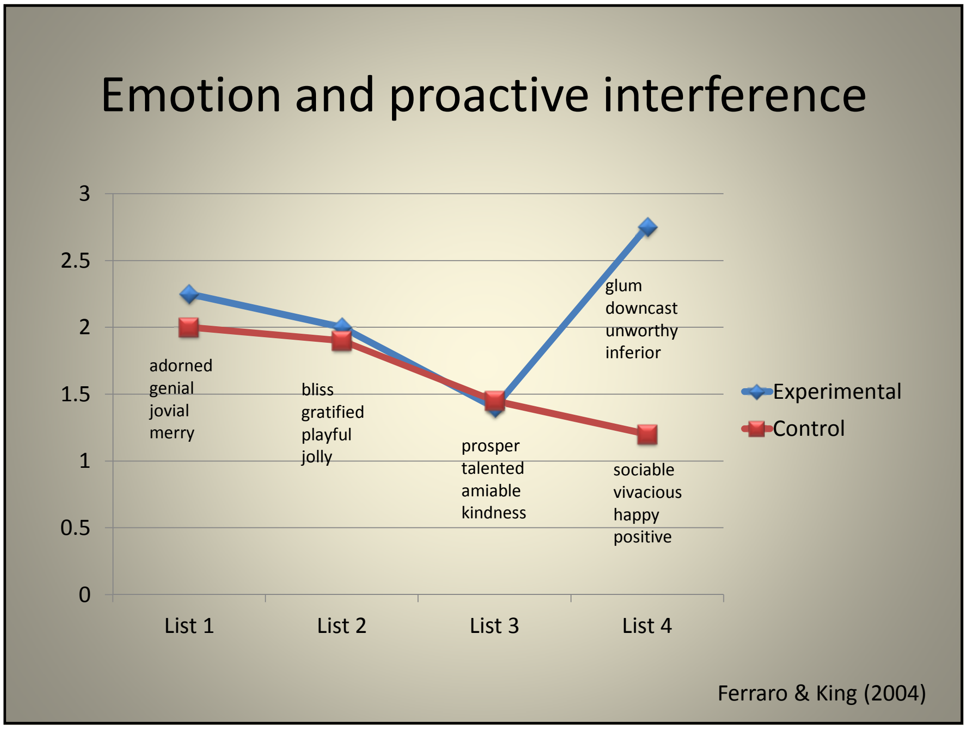


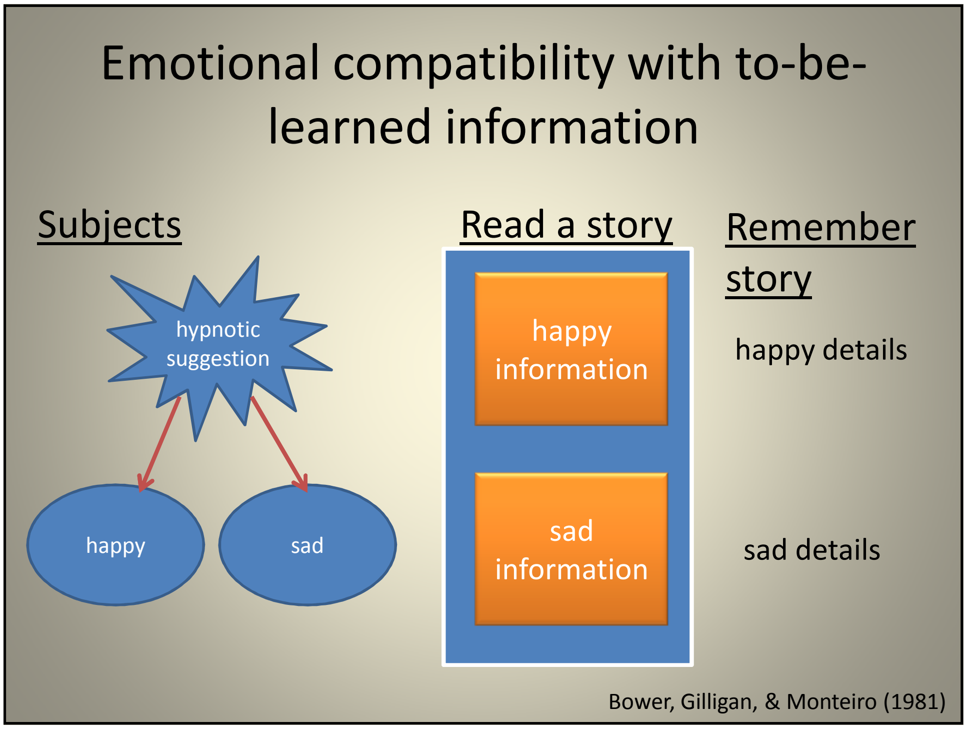
Figure 1. Mean proportion of information remembered by version of advertisements and age in Study 1. Error bars represent standard errors of the mean.

Older adults remember more about the emotion-tagged advertisements; younger adults remember more about the knowledge-based advertisements.



Emotion and proactive interference

Ferraro & King (2004)



Emotional compatibility with to-be-learned information

Subjects

hypnotic suggestion

happy

sad

Read a story

happy information

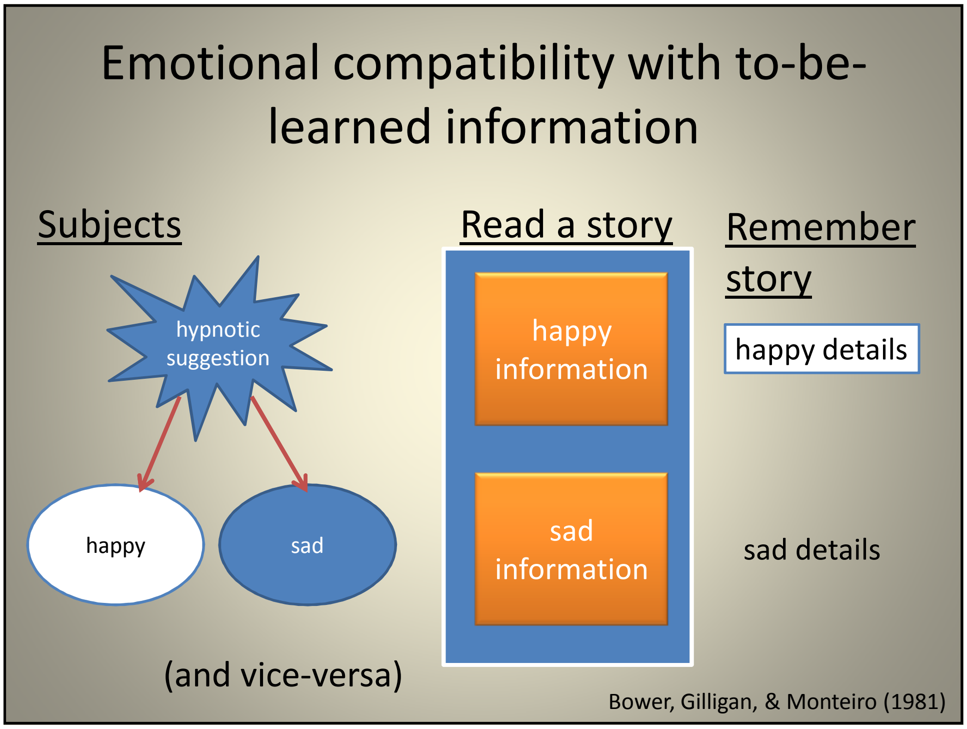
sad information

Remember story

happy details

sad details

Bower, Gilligan, & Monteiro (1981)



Emotional compatibility with to-be-learned information

Subjects

hypnotic suggestion

happy

sad

(and vice-versa)

Read a story

happy information

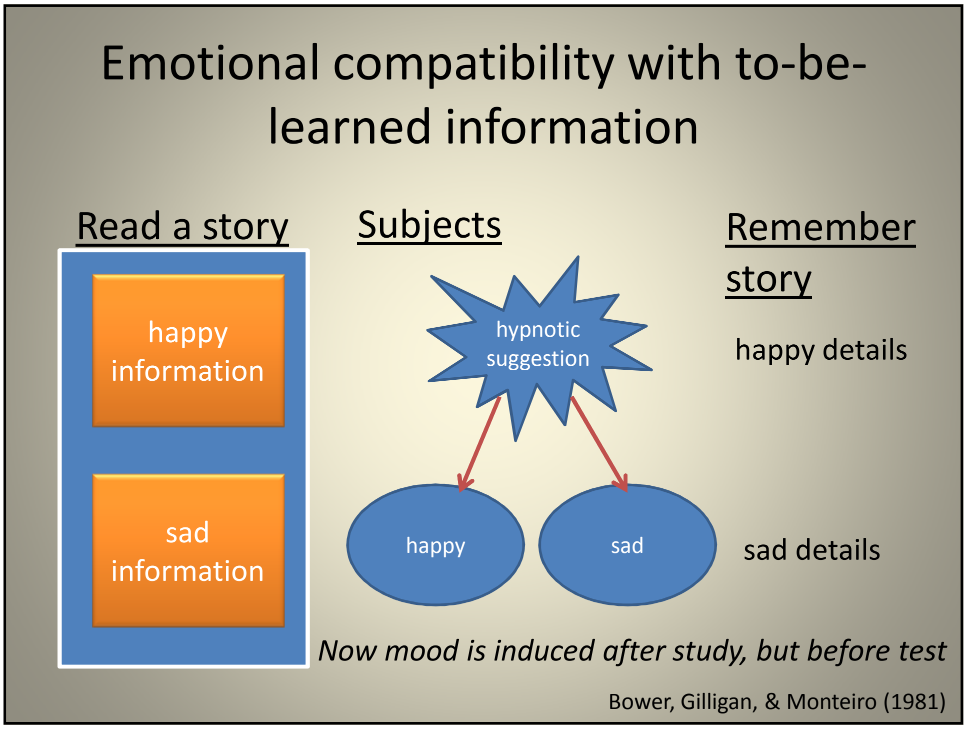
sad information

Remember story

happy details

sad details

Bower, Gilligan, & Monteiro (1981)



Emotional compatibility with to-be-learned information

Read a story

happy information

sad information

Subjects

hypnotic suggestion

happy

sad

Remember story

happy details

sad details

Now mood is induced after study, but before test

Bower, Gilligan, & Monteiro (1981)

Emotional “harbingers”

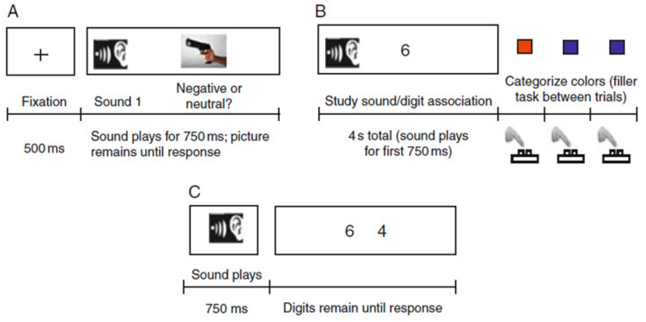

A
+
Fixation
Sound 1
Negative or neutral?
500 ms
Sound plays for 750 ms; picture remains until response
B
6
Study sound/digit association
Categorize colors (filler task between trials)
4 s total (sound plays for first 750 ms)
C
6 4
Sound plays
750 ms
Digits remain until response

Figure 2 In Mather and Knight’s (2008) Experiment 1, participants first learned which sounds preceded negative pictures (emotional harbinger sounds) and which sounds preceded neutral pictures (neutral harbinger sounds). Then, in the next phase, they were asked to learn associations between the sounds and digits (with an intervening color categorization task). In the final phase, they were asked to indicate which digit each sound had been paired with. Memory for the sound–digit pairings was worse for emotional harbinger sounds than for neutral harbinger sounds. Notes: Figure from Mather and Knight; pictures were in color.

taken from Mather (2009)

Next class:
Memory errors